

Sealed Planetary Return Canister (SPRC), Phase I

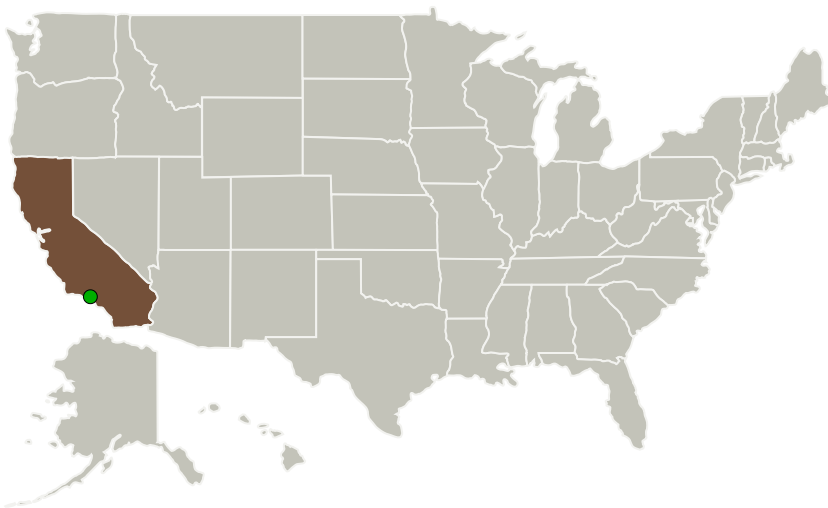
Completed Technology Project (2010 - 2010)



Project Introduction

Sample return missions have primary importance in future planetary missions. A basic requirement is that samples be returned in pristine, uncontaminated condition, necessitating development of a canister system capable of maintaining cleanliness and seal integrity through a variety of environments. Such a canister system, the Sealed Planetary Return Canister (SPRC), is proposed. Besides providing a high integrity seal, the canister also incorporates features that for robotic manipulation and to allow the sample to be accessed in a controlled manner upon return to Earth. The SPRC seal system addresses the two most significant concerns for planetary samples – seal surfaces contaminated by the sample and high pressure due to the phase change of volatiles. The SPRC incorporates a novel sealing system evolved from the only marginally successful Apollo seal approach but with added features to address the difficulties and inconsistencies observed. The indium is contained within a protective barrier to prevent oxidation, and the knife edge is mechanically cleaned during the sealing process. The container body will be configured to accommodate a variety of samples including rock cores, rock fragments, regolith, dust, and frozen soil. Atmospheric samples can also be preserved. The design is readily scalable and adaptable to specific missions.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Techno Planet Incorporated	Lead Organization	Industry Women-Owned Small Business (WOSB)	Northridge, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations

California

Project Transitions

**January 2010:** Project Start**July 2010:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140045>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Techno Planet Incorporated

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Scott P Stanley

Co-Investigator:

Scott Stanley

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Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX04 Robotic Systems
 - └ TX04.3 Manipulation
 - └ TX04.3.4 Sample Acquisition and Handling

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System